

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning at page 3, line 12, with the following rewritten paragraph:

B1 --Conventionally, as a method of purifying and removing metal ion impurities contained in an aqueous hydrogen peroxide solution, there is proposed a method comprising bringing a H^+ type strongly acidic cation exchange resin containing a sulfonic acidic group into contact with an aqueous hydrogen peroxide solution. However, merely by contacting the strongly acidic cation exchange resin with the aqueous hydrogen peroxide solution, although metal ion impurities such as Na are removed, it is difficult to remove impurities which are not dissolved completely in the aqueous hydrogen peroxide solution and/or which are originated from metal such as Al, Fe and Cr easily forming a complex with a hydroxide ion. There is a further problem in that a cation exchange resin is deteriorated ~~by contacting~~ when coming in contact with the aqueous hydrogen peroxide solution, and thereby, a large amount of sulfate ion is generated from a SO_3H group of the cation exchange resin.--

Please replace the paragraph beginning at page 4, line 6, with the following rewritten paragraph:

B2 --In an effort to solve the above problems, there is also known a method that after a contact ~~of~~ with an aqueous hydrogen peroxide solution and a cation exchange resin, further a contact with an OH^- type strongly basic anion exchange resin having a quaternary ammonium group is carried out. By said method, the impurities which ~~can not~~ cannot be removed by a strongly acidic cation exchange resin can be removed.--

Please replace the paragraph beginning at page 4, line 14, with the following rewritten paragraph:

B3 --However, in the use of the OH^- type strongly basic anion exchange resin, the aqueous hydrogen peroxide solution is sometimes decomposed ~~by contacting~~ when coming in contact with hydroxide ion (OH^-) contained in the anion exchange resin, and the decomposition is sometimes further accelerated by the existence of metal ion impurities such as Fe and Cr in the aqueous hydrogen peroxide solution.--

Please replace the paragraph beginning at page 7, line 15, with the following rewritten paragraph:

B4 --However, by using the above-mentioned methods, metal ion impurities can be removed merely to 1 ppb level. Therefore, aqueous hydrogen peroxide solutions purified by conventionally known methods are difficult to be used for ~~the field~~ fields such as the electronic industry requiring a high purity quality. Further, some of the above-mentioned conventional purifying methods are not practical to use since the production cost is expensive by using a high purity inorganic acid aqueous solution and an aqueous hydrogen peroxide solution having a metal ion component concentration of 20 ppt or less.--

Please replace the paragraph beginning at page 8, line 3, with the following rewritten paragraph:

B5 --Under these circumstances, the present inventors conducted extensive studies to solve the above-mentioned problems and found that metal ion impurities in an aqueous hydrogen peroxide solution can be removed up to a ppt level ($1/10^{12}$) by bringing the aqueous hydrogen peroxide solution into contact with, firstly, ~~with~~ a H^+ type cation exchange resin, secondly, with a carbonate ion (CO_3^{2-}) type or bicarbonate ion (HCO_3^-) type anion exchange resin, optionally with a fluoride ion (F^-) type anion exchange resin, and thirdly, again with a H^+ type cation exchange resin and, further, that the purifying method has the high duplicativity of the metal ion impurities removing level. The present invention has been accomplished on the basis of these discoveries.--

Please replace the paragraph beginning at page 8, line 18, with the following rewritten paragraph:

B6 --There are conventionally known a purifying ~~method~~ comprises methods comprising contacting an aqueous hydrogen peroxide solution with a cation exchange resin and then with an anion exchange resin and a purifying method using a mixed bed of a cation exchange resin and an anion exchange resin. (For example, see Japanese Patent Laid-open Publication No. 8-73205.) ~~Inventors~~ The inventors, however, found, in the methods, metal ion impurities such as Na, K and Al, ~~originated~~ originating from the final anion exchange resin ~~finally-used~~, elute into an aqueous hydrogen peroxide solution, and thereby exist as metal ion impurity. Furthermore, the inventors found that when the metal ion impurities such as Na, K and Al originated from the anion exchange resin are removed again by the cation exchange resin, metal ion impurities can be removed up to a considerably high purity level and also the duplicativity of the removing level is high.--

Please replace the paragraph beginning at page 14, line 22, with the following rewritten paragraph:

B7
--In the process for producing a purified aqueous hydrogen peroxide solution of the present invention, an aqueous hydrogen peroxide solution may be contacted with an adsorption resin before being brought into contact with an ion exchange resin.--

Please replace the paragraph beginning at page 15, line 3, with the following rewritten paragraph:

B8
--As the adsorption resin, a porous resin having no ion exchangeability is used. The porous resin comprises a styrene-divinylbenzene copolymer and has no ion exchange group. The porous resin desirably has a specific surface area which is measured by the BET method using nitrogen gas, in a dry resin of about 200 to 900 m²/g, preferably 400 to 900 m²/g. Further, such resins are desirable as having continuous pore of a pore volume in a dry state of about 0.6 to 1.2 ml/g, preferably about 0.1 to 1.1 ml/g as measured by mercury porosimetry method. As the porous resin, a resin which is constituted from polystyrene crosslinked by divinylbenzene and having a network structure can be used. Such adsorption resin includes Amberlite XAD-2 and XAD-4 produced by Rohm & Haas ~~company~~ Company and HP10, HP20, HP21, HP30, HP40, HP50, SP800 and SP900 produced by ~~MITSUBISHI CHEMICAL CORPORATION~~ Mitsubishi Chemical Corporation.--

Please replace the paragraph beginning at page 17, line 2, with the following rewritten paragraph:

B9
--By such treatment process, impurities, especially organic impurities contained in an aqueous hydrogen peroxide solution, can be highly reduced, and the amount of total organic carbon (TOC) in an aqueous hydrogen peroxide solution can be reduced.--

Please replace the paragraph beginning at page 17, line 17, with the following rewritten paragraph:

B10
--The regenerant is used in a volume equivalent to that of the adsorption resin to be treated or more, preferably 2 to 4 times as much as ~~the~~ as that of adsorption resin. The method of contacting an adsorption resin and a regenerant is a continuous flow process in which through the column packed with an adsorption resin, a regenerant is passed through upward at a SV (space velocity) of 3 to 6 Hr⁻¹ and a BV (Bed volume shows how many times of the volume of the ion exchange it is treated with and the unit is represented by

B10
L/L-R.) of 2 to 4 L/L-R. Further, after the flow of the regenerant, an ultra-pure water washing process comprising passing through of downflow of ultra-pure water and upflow of ultra-pure water is repeated 4 to 9 times to further wash the after-regenerated ion exchange resin. The upflow of ultra-pure water is passed through preferably at a SV of 10 to 30 Hr⁻¹ and a BV of 3 to 5 L/L-R, and downflow of ultra-pure water is preferably passed through at a SV of 10 to 30 Hr⁻¹ and a BV of 3 to 5 L/L-R. It is preferred that washing is carried out with ultra-pure water in an amount (volume) of 30 to 60 times as much as that of the resin.--

Please replace the paragraph beginning at page 23, line 6, with the following rewritten paragraph:

B11
--As the carbonate ion (CO₃²⁻) type or bicarbonate ion (HCO₃⁻) type anion exchange resin used in the present invention, the above-mentioned anion exchange resin, such as a chloride ion type, converted into a carbonate ion (CO₃²⁻) type or bicarbonate ion (HCO₃⁻) type is used. The anion exchange resin before being converted into a carbonate ion (CO₃²⁻) type or bicarbonate ion (HCO₃⁻) type may ~~not be~~ be not only a chloride ion type but also a hydroxide ion type and a fluoride ion type resin.--

Please replace the paragraph beginning at page 28, line 4, with the following rewritten paragraph:

B12
--The contact of an anion exchange resin and aqueous hydrogen peroxide solution is carried out at a low temperature in view of safety, such as prevention of degradation of the resin by oxidation, prevention of occurrence of cracker gas from hydrogen peroxide and heat generation by decomposition of hydrogen peroxide at the contact. Particularly, in the aqueous hydrogen peroxide solution treated with a H⁺ type cation exchange resin, H⁺ is sometimes contained more than that generated by dissociation of the aqueous hydrogen peroxide solution, and the H⁺ and an anion exchange group CO₃²⁻ or HCO₃⁻ react neutrally with each other and sometimes heat generation occurs. Further, in contacting the carbonate ion type or bicarbonate ~~type~~ ion type anion exchange resin and the aqueous hydrogen peroxide solution, cracker gas ~~is occurred~~ occurs by decomposition of the aqueous hydrogen peroxide solution and further heat generation by decomposition may occur. For the above-mentioned reasons, in treating an aqueous hydrogen peroxide solution with an anion exchange resin, it is preferred that the aqueous hydrogen peroxide solution has been cooled at a low temperature, 5°C or less.--

Please replace the paragraph beginning at page 29, line 5, with the following rewritten paragraph:

B13
--In the process for producing a purified aqueous hydrogen peroxide solution of the present invention, the aqueous hydrogen peroxide solution may be contacted with a fluoride ion type anion exchange resin after being brought into contact with the H^+ type cation exchange resin, before being brought into contact with the above-mentioned carbonate ion (CO_3^{2-}) type or bicarbonate ion (HCO_3^-) type anion exchange resin.--

Please replace the paragraph beginning at page 32, line 7, with the following rewritten paragraph:

B14
--In treating with a fluoride ion type anion exchange resin, an aqueous hydrogen peroxide solution is not necessarily cooled at ~~contacting with~~ upon contacting the exchange resin as in the case of contacting the solution with the carbonate type or bicarbonate type anion exchange resin, since the aqueous hydrogen peroxide solution is not easily decomposed.--

Please replace the paragraph beginning at page 32, line 21, with the following rewritten paragraph:

B15
--In the purified aqueous hydrogen peroxide solution treated with the fluoride ion type anion exchange resin, fluoride ions occurred by the ion exchange are contained. However, the fluoride ions can be removed by ~~contacting~~ coming in contact with an anion exchange resin such as the above-mentioned carbonate or bicarbonate type resin.--

Please replace the paragraph beginning at page 33, line 24, with the following rewritten paragraph:

B16
--By treating with the H^+ type cation exchange resin again, even a minute amount of Na^+ , K^+ and Al^{3+} contained in the anion exchange resin as impurities can be removed. Namely, metal ion impurities can be removed up to the very high level such as a ppt level or its vicinities. Counter ions of Na^+ , K^+ and Al^{3+} , which ~~is~~ are to be removed, are carbonate ions or bicarbonate ions which are evaporated as carbon dioxide after the cation exchange and thereby do not remain in the aqueous hydrogen peroxide solution. When the aqueous hydrogen peroxide solution is not treated with the second H^+ type cation exchange resin, the minute amount of metal ions contained as impurities sometimes may not be removed.--

Please replace the paragraph beginning at page 47, line 13, with the following rewritten paragraph:

B17
--In Example 1, after the H⁺ type cation exchange resin treatment was carried out and, further, an aqueous hydrogen peroxide solution was passed through the bicarbonate ion type anion exchange resin, the solution ~~took out~~ removed from the outlet was diluted with ultra-pure water to prepare 31% by weight aqueous hydrogen peroxide solution. The metal ion impurity concentration of the obtained aqueous hydrogen peroxide solution was high, such that Na ion concentration is 21 ppt, K ion concentration is 14 ppt and Al ion concentration is 38 ppt.--

Please replace the paragraph beginning at page 48, line 2, with the following rewritten paragraph:

B18
--In Example 3, after the H⁺ type cation exchange resin treatment was carried out and an aqueous hydrogen peroxide solution was treated with the fluoride ion type anion exchange resin and then passed through the bicarbonate ion type anion exchange resin, the solution ~~took out~~ removed from the outlet was diluted with ultra-pure water to prepare a 31% by weight aqueous hydrogen peroxide solution. The metal ion impurity concentration of the obtained aqueous hydrogen peroxide solution was high, such that Na ion concentration is 250 ppt, K ion concentration is 10 ppt, Al ion concentration is 20 ppt and Ti ion concentration is 25 ppt. --